**Real Time Operating System syllabus**

**Unit I:** Introduction to Real Time Systems: Real time systems, soft vs. hard

real time systems, Concept of computer control, sequence, loop and supervisor

control, centralized, hierarchical and distributed systems, applications of real

time systems, hardware requirement for real time applications, specialized

processors, interfaces, communications.

**Unit II:** Real Time Scheduling: Clock Driven approach, Weighted Round robin

approach, Priority Driven approach, Concept of effective release time and

deadline, Optimality and non optimality of EDF & LST.Real Time operating System: Task management, Real Time Clock Handler, Code

sharing, Resource Control, Inter task Communication and control.

**Unit III:** Design of Real Time System: Specification, Preliminary Design,

multitasking Approach, monitors, Rendezvous.

Design Analysis: Introduction, Petri nets, Analysis of Petri Nets, Scheduling

problem, Real Time Database, Real Time Vs General Purpose Databases,

Transaction priorities and Aborts, Concurrency Control, Disk Scheduling

Algorithms, Maintaining Serialization Consistency.

Unit IV: Programming Language and Tools: Desired language characteristics,

Data typing, Control structures, Facilitating hierarchical decomposition ,

packages, Run time error handling, Overloading and generics, Multitasking, Low

level programming, Task scheduling, Timing specifications, Programming

environments, Run time support.

**Unit V:** Fault Tolerance Techniques: Introduction, Faults, Errors and Failures,

Fault types, Detection and Containment, Redundancy, Integrated Failure

Handling.

**Unit VI:** Reliability Evolutions: Introduction, Parameters, Reliability Models for

Hardware, Software Error Models.

Commercial Real Time Systems: General concepts, Unix and Windows as RTOS.

**Text Book:-**

1. Real-Time Systems, Jane W. Liu, Pearson Education, 2001.

**Reference Books:**

1. Real-Time Systems: Theory and Practice, Rajib Mall, Pearson, 2008.

2. Real-Time Systems, Jane W. Liu, Pearson Education, 2001.

3. Real-Time Systems, Krishna and Shin, Tata McGraw Hill. 1999.